

# HOUSING & DEMOGRAPHICS

## INTRODUCTION

According to Webster’s dictionary, demography is “the statistical study of human populations, especially with reference to size and density, distribution, and vital statistics.” Therefore, an in-depth analysis of the demographics of a city becomes crucial to understanding current and future trends and how these trends will impact the area. Presented below is a glimpse of the demography of the City of Vandalia. Historical demographic information, mainly the 1990 United States Census, is used as the base for much of the analysis presented. Information was also obtained from the Miami Valley Regional Planning Commission and the City of Vandalia website.

## POPULATION

The great majority of population growth in Vandalia occurred after 1940. In the period between 1940 and 1970, the population grew from under 400 to approximately 11,000. In 1990, the US Census reported there were 13,882 persons living in Vandalia. This made Vandalia the seventh largest city in Montgomery County in 1990.

**Table 5.1**

<b>Largest Cities</b>	<b>1990 Census</b>
Dayton	182,011
Kettering	60,569
Huber Heights	38,686
Trotwood	29,358
Centerville	21,082
Miamisburg	17,834
Vandalia	13,872
West Carrollton City	14,403
Englewood	11,402
Oakwood	8,957

Source: 1990 US Census

**Table 5.2**

<b>City</b>	<b>1998 Population Estimate</b>
Dayton	169,857
Kettering	57,205
Huber Heights	42,212
Trotwood	28,018
Riverside	25,589
Centerville	23,035
Miamisburg	18,304
Vandalia	14,021
West Carrollton	13,709
Clayton	13,685
Englewood	11,870
Oakwood	8,343
Moraine	7,568
Union	5,646

Source: MVRPC

West Carrollton, and Oakwood.

Table 5.2, left, shows 1998 population estimates for cities in Montgomery County. From 1990 to 1998 the majority of municipalities in the region experienced a decline in population. Dayton, the core city in the region, experienced a 6.7 percent decrease in population. Other central cities across Ohio are experiencing this same pattern – shrinking central city populations and increasing suburban populations. In Montgomery County several of the older suburbs have also experienced a decrease in population from 1990 to 1998. These include Trotwood,

-+Based on 1998 estimates, Vandalia’s population increased by 149 individuals from 1990 to 1998. This represents an overall growth rate of 1.1 percent. The cities of Englewood and Centerville had the highest growth rates with 9.3 percent and 4.1 percent, respectively.

**Table 5.3**

<b>Year</b>	<b>Estimated Population</b>
1991	14,023
1992	14,087
1993	14,127
1994	14,130
1995	14,136
1996	14,131
1997	14,074
1998	14,021

Source: US Census Bureau

Population estimates since the 1990 Census have been made available through the Census Bureau. These numbers indicate trends within the past decade. The most recent data can be found in Table 5.3. This information suggests that Vandalia experienced a slight population decline during the second half of the 1990’s. However, due to population changes since the 1990 Census, there is some inaccuracy that must be expected in applying these figures to

Vandalia in the year 2000.

## **POPULATION PROJECTIONS**

It is not enough to only examine the current population’s needs and conditions. To be effective, decisions made today must consider changes that will take place in the future. Changes in population have an effect not only on the level of city services and facilities that must be provided but also on the type and amount of private investment that occurs in a community.

All projections are based on a variety of assumptions. For that reason, ranges of projections are often developed to give higher and lower estimates based on different scenarios. Having knowledge of the community can help to decide which projection is most likely, but it is important to keep in mind that no projection is foolproof. In particular, one should note that the longer the time interval of the projection and the smaller the geographic area under consideration, the greater is the chance for inaccuracy.

Total population was projected in three manners. The *Linear Regression* and *Mathematical Extrapolation* methods are very simple and assume linear (straight line) growth or decline. Linear projections assume that growth or decline will continue without limit. While these trends may continue for some time, it is extremely unlikely that they will continue forever. The third projection methodology, *Modified Exponential*, assumes that at some point a city’s growth will be impeded by a lack of adequate resources, public facilities, available land and other amenities. Declining communities rarely disappear entirely; rather, they decline only until they reach population and employment levels appropriate to their current position in the regional or national economy.

**Table 5.4**

<b>Year</b>	<b>Linear Regression</b>	<b>Modified Exponential</b>	<b>Mathematical Extrapolation</b>
2000	17,880	16,002	14,642
2010	21,650	17,489	15,444
2020	25,420	18,519	16,290

The *Linear Regression* analysis is a high estimate of potential

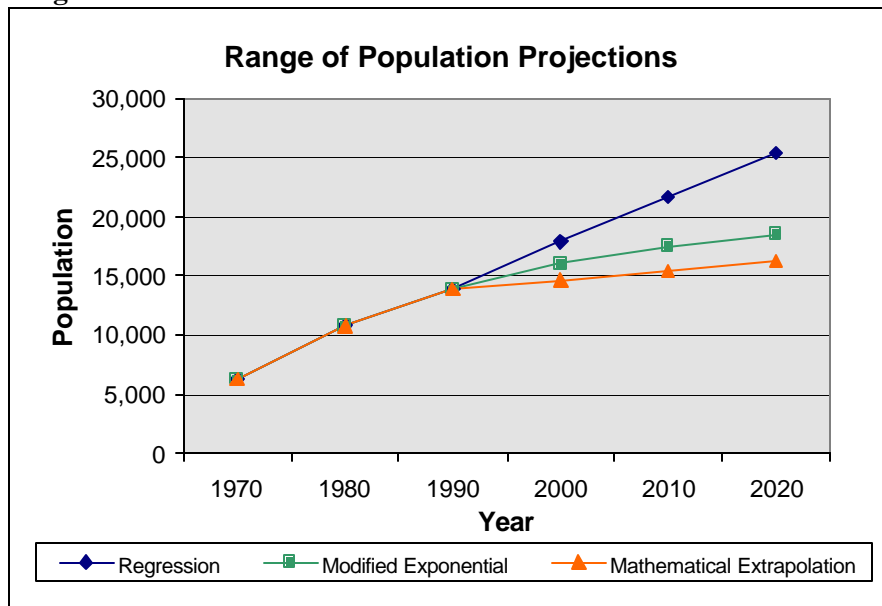
population and assumes unlimited resources for growth. A *Linear Regression* was completed using total population from 1970 to 1990. From this, the total population for 2000 was estimated to be 17,880. However, it is unlikely that the current population is 17,880. The Ohio Department of Development (ODOD) estimated that the 1998 population of Vandalia was 14,021. An increase of over 3800 persons is not likely in two years. But, it is possible that ODOD estimates are also flawed. With this projection, the population will reach 25,420 by 2020.

The *Modified Exponential* method assumes that long-term growth will continue at a decreasing rate until the region’s population approaches an upper limit. As defined by the exponential curve equation, the 2020 upper growth limit for the City of Vandalia is 18,519. Total population will slowly approach this upper growth limit but never exceed it unless the resource base is expanded. This method provides a moderate estimation of future population.

The *Mathematical Extrapolation* method calculates a rate of population change into an exponent of “e” (a natural logarithm) and converts it into a relative change in population for a specific time period. In this case, the rate was computed from total populations in 1980 and 1990. This assumes that the same growth rate will continue into the future. Based on this method, current population would be 14,642. By 2020, the population would reach 16,290. This is a conservative estimation of future population.

Figure 5.1 below is a graphic representation of the results using the various projection methodologies. Notice that there is not a large gap in the numbers generated with the *Modified Exponential* and *Mathematical Extrapolation* methods.

**Figure 5.1**



The equations and methodology used to generate the Modified Exponential Curve can be found in Appendix 2.

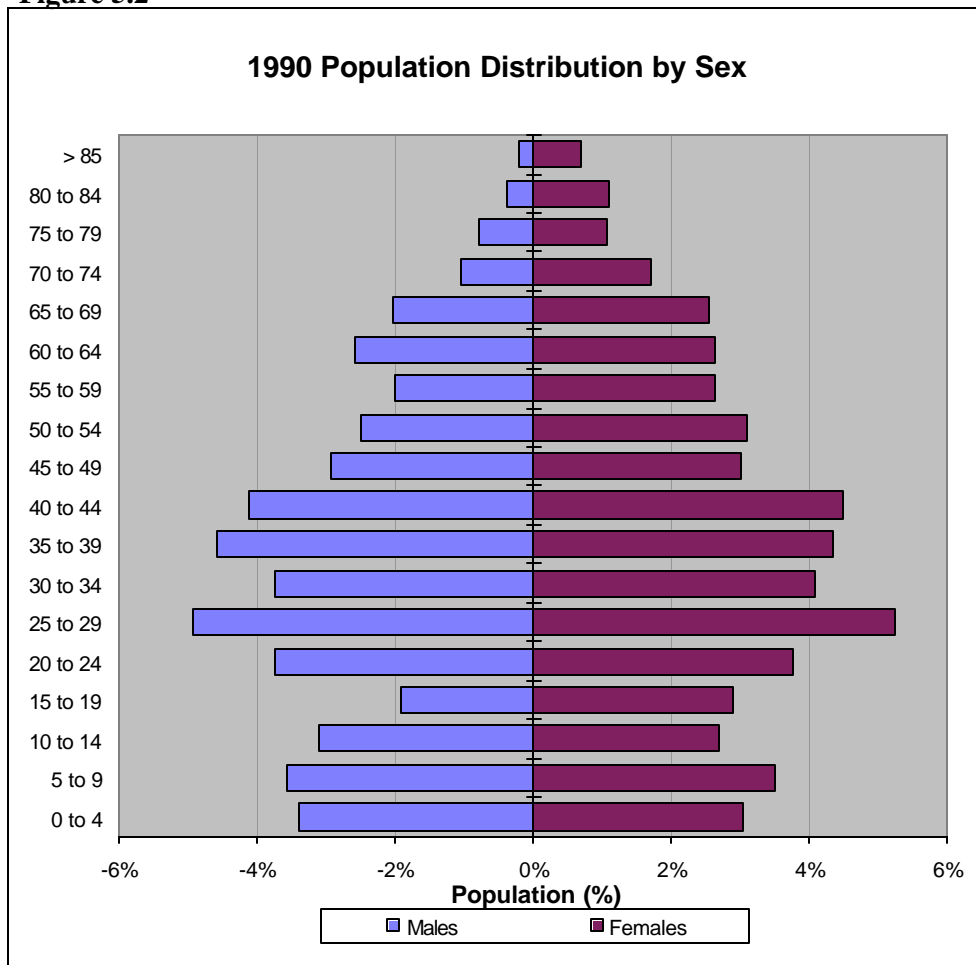


## POPULATION CHARACTERISTICS

Population pyramids are useful tools in demographic analysis. They indicate the percentage of the population that falls into specified age cohorts by sex. They allow researchers to look at present trends in a population and plan for its future needs. “Normal” population pyramids have the greatest percentage of individuals in the youngest age cohorts and the fewest in the oldest age cohorts—thereby forming a pyramid shape when graphed. In analyzing the following population pyramid, it must be taken into consideration that the information is based on the 1990 Census. While the number of individuals in each birth cohort has changed since 1990, the overall structure should still represent an accurate picture of Vandalia.

The age and gender distributions for Vandalia’s population are shown in Figure 5.2. The diagram shows the largest group of individuals in Vandalia in 1990 was between the ages of 20 and 45. The population distribution shows a very small population of elderly. Also noted is an unusually low number of children aged 19 and below, especially between the ages of 15 and 19.

**Figure 5.2**



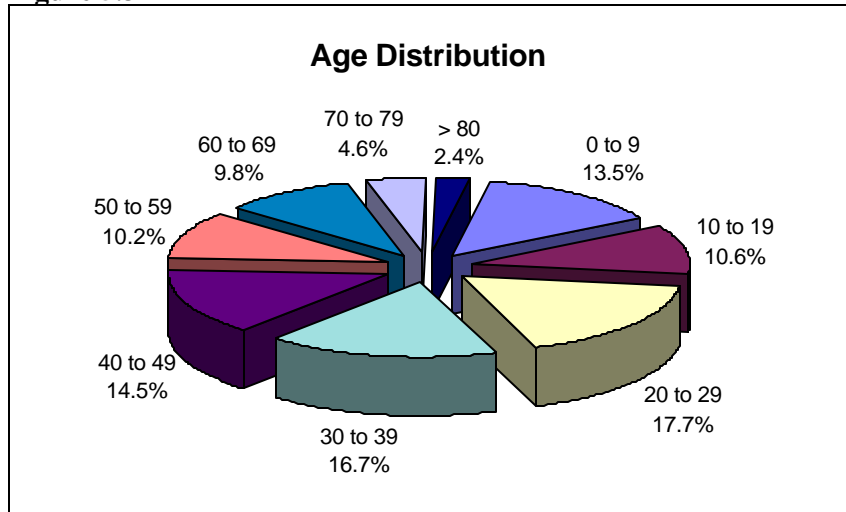
Source: 1990 US Census Bureau

The population pyramid shows a swell in the 25 to 29 age cohort. The City has an excellent school system and Parks and Recreation Department that attract young families in this age range. Notice that there is a decline in the 15 to 19 age cohort. Since the City of Vandalia is not home to a college or university and since housing prices have escalated in recent years, this is understandable. Once many of these individuals in this cohort reach 18, they leave home for college or affordable housing and employment opportunities. The pyramid also shows a declining elderly population. This is also a common phenomenon in northern cities. Many elderly individuals relocate to a warmer climate once they retire. If they do not completely move, they tend to leave during the winter months. Also, the pre-WWII population in Vandalia was small. These pre-WWII residents would naturally constitute a smaller percentage of the total population today since Vandalia has experienced such a population boom.

In 1990, the total number of females (7,185) was somewhat higher than the total number of males (6,516) in Vandalia. While males were more represented in the lower age cohorts, females significantly dominated the population in almost every age group beyond 50 years of age. Also, the 1990 Census shows Vandalia having a total of 3,963 families

Figure 5.3 specifically illustrates the 1990 age breakdown of the population of Vandalia. While there is a slight swelling in population in the 20 to 39 range, the population is fairly well distributed among age cohorts. As previously stated, this trend is unusual. In most areas, there tends to be a higher percentage of children nine and under.

**Figure 5.3**



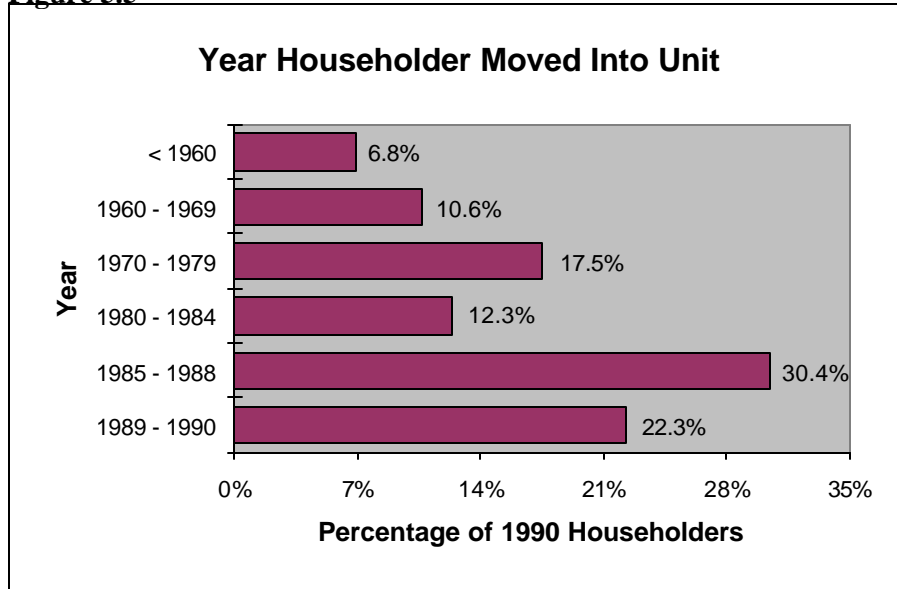
Source: 1990 US Census Bureau

Educational attainment in Vandalia is similar to state and county averages. Vandalia had a higher percentage of population with high school diplomas, 80.4 percent, when compared to Montgomery County, 77.8 percent, and Ohio, 75.7 percent. However, when again comparing Vandalia to the County and State, Vandalia has a smaller percentage of its population that has earned a bachelor's degree or higher. In Vandalia, 16.2 percent of the population has earned at least a bachelor's degree in comparison to 17 percent in the state and 20 percent in Montgomery County.

## HOUSING ANALYSIS

Examining the settlement pattern of Vandalia gives us information about growth and development as well as the age of the housing structures in the City. Vandalia had a relatively low and stable population until after World War II. In the following 20 to 25 year period, the City grew by approximately 10,000.

**Figure 5.5**



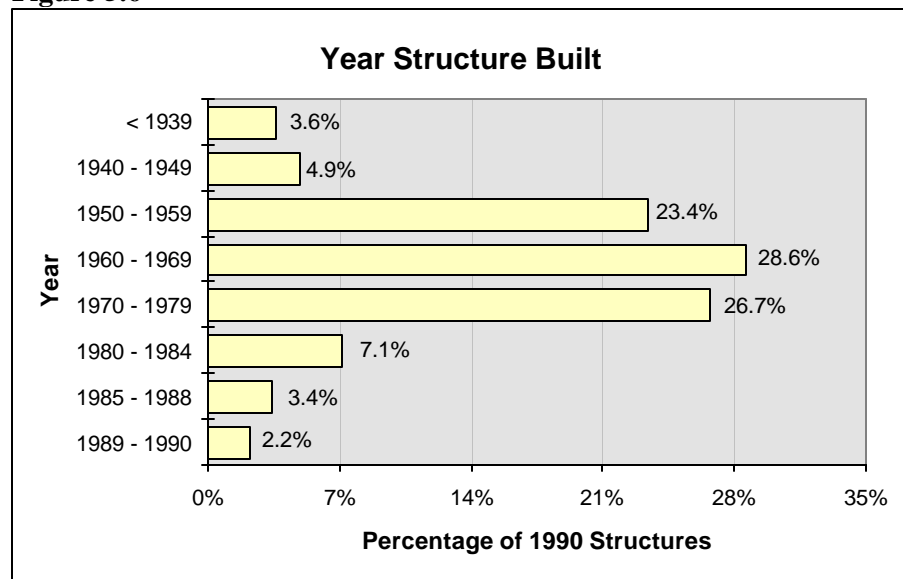
Source: 1990 US Census Bureau

Figure 5.5 indicates when current householders moved into their present place of residence in Vandalia. Over 17 percent of the 1990 householders moved into the City during the period before 1970. The

same percentage moved into Vandalia in the following decade. However, the majority of 1990 householders (approximately 65 percent) moved into the City within the 1980 to 1990 time period.

Figure 5.6 illustrates when the housing structures existing in 1990 were constructed. The figure shows that most of the 1990 structures in Vandalia were built between 1950 and 1979. The peak building time occurred in the 1960's. Less than 13 percent of the structures

**Figure 5.6**



Source: 1990 US Census Bureau

existing in 1990 were built after 1980. In fact, the 1980's saw a 14 percent decrease in building compared to the previous decade. However, there has been a building boom in the 1990's.

Table 5.5 shows housing starts in Vandalia in the 1990's. The numbers of single-family housing starts remain fairly stable across the decade with the fewest starts (37) in 1992 and the greatest starts (66) in 1993. Multi-family housing starts, however, were subject to much greater fluctuations in numbers. The fewest multi-family starts were in 1997 with only three. However, in 1999, there were 152 multi-family housing starts.

**Table 5.5**

Housing Starts		
Year	Single-family	Multi-family
1990	50	7
1991	39	8
1992	37	21
1993	66	21
1994	57	16
1995	61	8
1996	60	13
1997	47	3
1998	61	24
1999	51	152
<b>Total</b>	<b>529</b>	<b>273</b>

Source: City of Vandalia

There are several new housing developments under construction within the City. As shown on the City's website, the following list represents subdivisions actively under construction.

**East of I-75**

- Brown School Village located west of South Brown School Road approximately 0.3 miles south of National Road.
- Brown School Woods located west of South Brown School Road approximately 1.2 miles south of National Road.
- Cassel Hills / Cassel Creek located east of South Brown School Road, off of Brindlestone Drive approximately 0.6 miles south of National Road.
- The Falls located off of East National Road approximately 0.5 miles east of Brown School Road.
- Foxfire located west of South Brown School Road approximately 0.2 miles north of Little York Road.

**West of I-75**

- Ashbury Farms / Mulberry Woods located between Stonequarry and Mulberry Roads approximately 0.3 miles west of South Dixie Drive.
- Woodland Meadows located along the east side of Helke Road approximately 0.3 miles north of Stonequarry Road.
- Guillman Estates located on Dixie Road near Alkaline Springs Road.
- Timberwind
- Timberlake

**TRENDS**

Vandalia is attracting very young families and losing slightly older families with children. Housing prices continue to increase within the City of Vandalia. The majority

of housing currently being constructed is single-family with a starting price of \$180,000. However, Vandalia also has a large selection of post-WWII homes that provide opportunities for first-time homebuyers. These homes are between 20 to 50 years old, signifying a probability of maintenance needs.

Vandalia’s housing starts and therefore population continue to increase. In 1990 Vandalia had a total of 5694 households. The population in 1990 was 13,858. This makes the average number of persons per household 2.43. From 1990 to 1999, a total of 802 household units were added to the City of Vandalia. If the average number of persons per household mirrors the 1990 average, then population increased by 1948 persons from 1990 to 1999 as a result of this new construction. However, national household size has decreased during the past decade. The national average household size is approximately 2.2.

**Household Projection**

Using the completed population projections, a proportion analysis was performed to project year 2000 household numbers by type in the City of Vandalia, see Table 5.6 below. This projection assumes that the number of persons per household will remain the same from 1990 until 2000. This is a conservative estimate based on recent studies that indicate that the cultural trends that have been so significant in the last two decades have stabilized. For instance, the method assumes that the divorce and marriage rates and the formation of female-headed families and non-family households will remain fairly steady. In this projection, the types of projected households are determined by multiplying the total number of households in 2000 by the 1990 proportions of these types.

**Table 5.6**

	<b>1990 Households</b>	<b>Range of 2000 Households</b>
Married	3368	3608 to 4407
Male Headed	24	26 to 31
Female Headed	299	320 to 391
Single Person	272	291 to 356
Nonfamily	1731	1855 to 2265
<b>Total</b>	5694	6101 to 7450

**Montgomery County Consolidated Plan**

The Montgomery County Consolidated Plan for 1995 to 1999 outlined housing goals for targeted populations in the County’s major municipalities. The plan included recommendations for low and moderate income housing with special attention to groups such as the homeless and persons with mental or physical disabilities. The plan also included a geographic distribution of where affordable housing units should be located to provide increased housing opportunities throughout the County. Based on population, each municipality in the County was given a five-year goal for number of additional affordable housing units. According to Housing Administrator Roberta Longfellow, the City of Vandalia met its original goal of 50 units. The City will have a new goal for the time period involved in the new plan.

While Vandalia met its goal for affordable housing, there are several housing need areas that Longfellow believes the City should consider. These include:

- Housing units with transitional services for teens, victims of domestic violence, mentally ill, homeless, etc.
- Housing units suitable to persons with mental retardation / illness and developmental / physical disabilities
- Housing for low and moderate income first time homebuyers with children
- Safe, affordable housing for persons with AIDS
- Awareness and reduction of lead-based paint threats in housing

### **RECOMMENDATIONS**

Several recommendations made in the 1985 comprehensive plan continue to be valid housing strategies for the City. They include:

1. Promote desirable residential growth that enhances diversity of housing stock while targeting specific population groups.
2. Locate new housing as to minimize future expenses associated with utilities and services; encourage infill of vacant areas.

Additional recommendations include:

3. Promote a spectrum of housing types suitable to the needs of the elderly including working with local service providers to ensure that the needs of elderly individuals “aging-in-place” are met.
4. Seek annexation opportunities that will provide land suitable for housing development.
5. Actively enforce the property maintenance code.